Available online at www.sciencedirect.com

ScienceDirect

Procedia Economics and Finance 25 (2015) 318 – 331

Procedia Economics and Finance

www.elsevier.com/locate/procedia

16th Annual Conference on Finance and Accounting, ACFA Prague 2015, 29th May 2015

Determinants of Share Price and Share Liquidity: An Analysis Using a SEM Model

Helena Alves[a]* Natália Canadas[a] Ana Maria Rodrigues[b]

[a] *Polytechnic Institute of Leiria, Superior School of Technology and Management, Leiria, Portugal*
[b]*Faculty of Economy of the University of Coimbra, Portugal*

Abstract

We examined the impact of governance rules on share price and liquidity, using the turnover ratio and the bid-ask spread as proxies for the information asymmetry. We used a SEM model and analyzed the indirect relations through the voluntary disclosure of information and the organizational performance. We built a voluntary disclosure index based on the information firms provided in their annual reports and divided the governance characteristics in two constructs: directors' and supervisors' structures and ownership structure.

We concluded that the ownership structure exerts a direct influence on share price and share liquidity, Otherwise, the directors' and supervisors' structures exert an indirect influence, through the organizational performance and the voluntary disclosure of information. The results also show that for firms with high levels of disclosure the bid-ask spread is lower. However, in firms with a high ownership concentration investors tend to increase the bid-ask spreads and trade less, which, in this case, reduces the liquidity of the stock. The failure to find the relationship between voluntary disclosure of information and the turnover ratio shows us that the liquidity of shares is more related to the greater or lesser concentration of shareholders, with the performance of their companies than with the access to information. Moreover, it is clear that the role that information disclosure plays is mainly at the level of price formation.

Peer-review under responsibility of University of Economics, Prague, Faculty of Finance and Accounting

Keywords: Corporate Governance; Share Price;Share Liquidity; Voluntary Disclosure; Structural Equation Modelling (SEM).

* Corresponding author.
E-mail address: helena.alves@ipleiria.pt

Peer-review under responsibility of University of Economics, Prague, Faculty of Finance and Accounting
doi:10.1016/S2212-5671(15)00742-X

1. Introduction

The results of prior studies about the relation between voluntary disclosure and information asymmetry suggest that voluntary public information can reduce the level of information asymmetry among market participants, and thus can help to form an efficient market. Analytically, Barry and Brown (1985), Diamond (1985), Diamond and Verrecchia (1991) and Kim and Verrecchia (1994) argue that more information generally reduces information risk on prices. Likewise, voluntary disclosure serves to reduce information asymmetry among traders. Empirically, Leuz and Verrecchia (2000), Healy *et al.* (1999) and Welker (1995) investigate links between voluntary disclosure and stock liquidity. Companies might pursue a disclosure strategy in response to perceived illiquidity for their shares in the market. Disclosure literature has shown that high quality of public disclosures reduce information asymmetry and, as a result, increase stock market liquidity. Bushee and Noe (2000), Leuz and Verrecchia (2000) and Welker (1995) argue that information asymmetry could be measured by both trade-based and order-based measures i.e. transaction volumes and bid-ask spreads.

We pretend to study the impact of governance rules on share price and liquidity, using the turnover ratio and the bid-ask spread as proxies for the information asymmetry. We used a SEM model and analyzed the indirect relations through the voluntary disclosure of information and the organizational performance. Voluntary disclosure is a channel through which existing and potential shareholders obtain value information about the firm, namely about the company's performance, been, for that reason, the connection between corporate "insiders" and capital market "outsiders". Through the 1970s and 1980s the research on corporate governance issues was largely focused on United States corporations. In more recent years, however, we have witnessed an explosion of research on corporate governance around the world, for both developed and emerging markets. Despite this, and according to Méndez and García (2007), in contexts featured by high ownership concentration and board of directors dominated by representatives of controlling shareholders, it is more difficult to extrapolate from studies on the Anglo-Saxon markets. Specific research is therefore needed to take in account these features, which are the norm in many countries (Shleifer and Vishny, 1997). The Spanish and Portuguese institutional setting has in common with other European Continental countries a relatively low number of listed companies, an illiquid capital market and, above all, a high level of concentration in corporate shareholdings. According to Denis and McConnell (2003, p. 29), concentrated ownership can be a "*reasonable response to a lack of investor protection*". In this sense, Spain and Portugal provide a suitable environment to test the existence of interactions among governance rules, corporate voluntary disclosure and information asymmetry in the market. The uncertainty and the asymmetry of information create problems of conflict of interest, which affect the basic functions of the organizations as well as their potential for the creation of value. Given that the information provided reflects the degree of transparency and accountability of the organization with shareholders, it becomes one of the most important aspects of corporate governance. We built a voluntary disclosure index based on the information firms provided in their annual reports. We divided the governance characteristics in two constructs: directors' and supervisors' structures and ownership structure. By using the methodology of structural equation modelling, we are able to analyse the direct and indirect relations among the variables under study. We analyse the impact of the different voluntary information categories on the information asymmetry proxies. It was unclear if the effect of providing further information about one category is different from the effect of increasing voluntary disclosure on other category. Consistently with prior definitions in different regulatory national environments (Cooke 1989; Raffournier, 1995; Meek *et al.*, 1995; Depoers, 2000; Allegrini and Greco, 2011), we consider voluntary disclosure as the information released to the outside deriving from management's insider knowledge of the company, which are not required to be published in regulated reports. Voluntary disclosure is, therefore, produced by a management's reporting decision (Meek *et al.*, 1995; Healy and Palepu, 2001).We analysed the information disclosed by Iberian Peninsula non-financial listed companies, concerning the year of 2007. In this sense, we analysed the information disclosed few time after the obligation of following International Financial Reporting Standards (IFRS) as endorsed by the European Union. Furthermore, in Spain, the Unified Good Governance Code, applicable from 2007 onwards, provided a common standard for the good governance practices of all listed firms. In Portugal, the recommendations on Corporate Governance were implemented in 2001, continuing to regularly improve its legislative framework through a process of bi-annual amendments.

This paper is hereby intended to contribute to the study of the impact of the corporate governance rules in the voluntary disclosure of information, and hence in the reduction of information asymmetries, in the specific case and reality of the countries of the Iberian Peninsula. Furthermore, most of the prior research in this area has studied the link between corporate governance and disclosure and between disclosure and information asymmetry. Few studies directly examined the link between corporate governance and information asymmetry. One way of viewing the contribution of our study is that it provides a *triangulation* of the relationships between corporate governance, voluntary disclosure and a market-determined measure of information asymmetry (*i.e.* bid-ask spread and turnover ratio). Otherwise, there is a considerable lack of studies about the information asymmetry subject, using Portuguese and Spanish data. This paper is organized as follows. In the next section, section 2, the research hypotheses are presented and in section 3 the research design is described. Section 4 describes the data and the descriptive statistic. Analysis and results are discussed in Section 5. Section 6 summarizes and concludes the study.

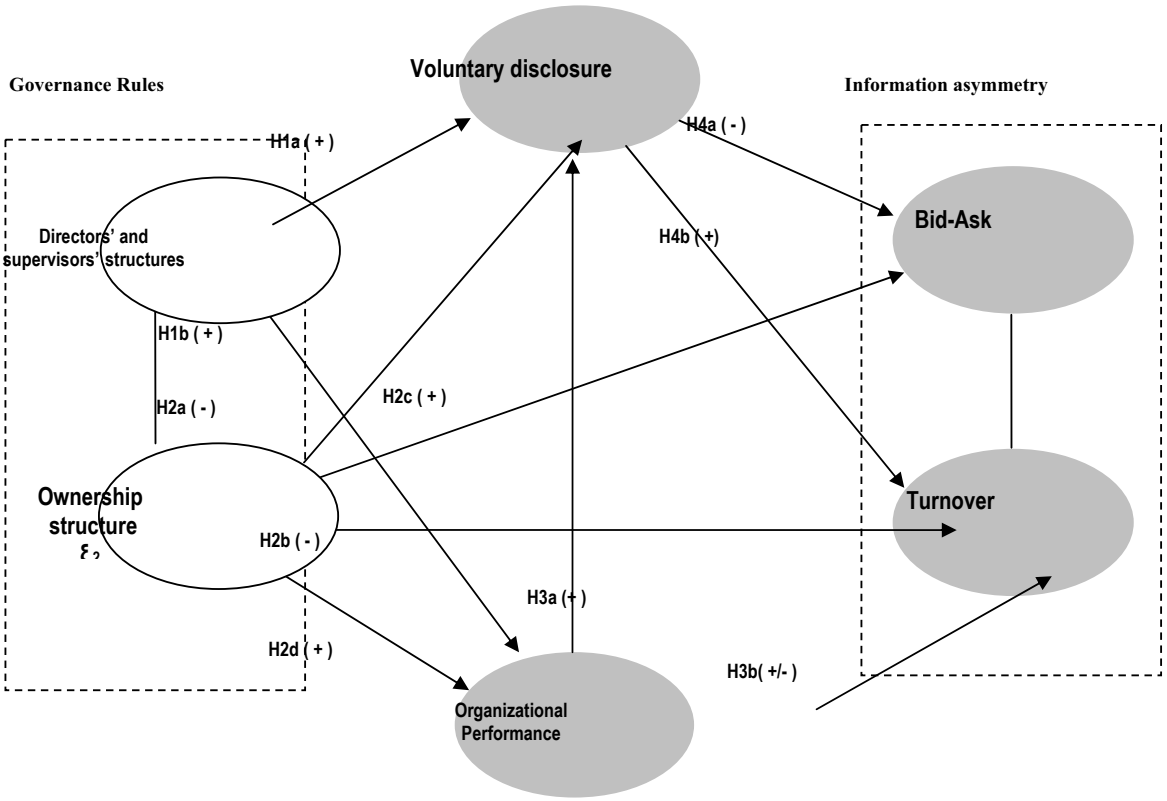
2. Research Design

2.1 Research Model

The accounting report is the most affirmative way to give visibility to the activity and to the organizational performance. Because of this, it works as a sign of the governance of the company but also as a measure of the management quality. Corporate disclosure has a major role to ensure the efficient functioning of capital markets. Lang and Lundholm (1993) argue that firms with high disclosure ratings tend to show high contemporaneous earnings performance. Also Petersen and Plenborg (2006) state that firms may increase disclosure when they are performing well. In this sense, the inclusion of organizational performance in the proposed model is explained by the fact that disclosure is a channel through which existing and potential shareholders obtain valuable information about the firm, namely about the company's performance, being, for that reason, the connection between corporate "insiders" and capital market "outsiders". A higher profitability might induce management to supply more information to illustrate its ability to maximize the shareholder's value (Singhvi and Desai, 1971). In this sense, and according to Healy and Palepu (2001, p. 431), "*the association between capital market variables and disclosure may be driven by firm performance rather than disclosure per se*". Our model followed the arguments of the authors by considering that "*disclosure changes are unlikely to be random events: they are likely to coincide with changes in firm economics and governance characteristics*".

We divided the governance rules in two major constructs: the ownership structure and the directors and supervisors structures. We hypothesized that directors and supervisors structures can influence the organizational performance and the information disclosed by firms to its shareholder and this, in turn, would affect the level of information asymmetry between management and shareholders. In relation to ownership structure, it is expected to exert an indirect influence on the level of information asymmetry, but the previous research showed us that a direct influence can also be expected. Like stated previously, the Spanish and Portuguese institutional setting has in common with other European Continental countries a high level of concentration in corporate shareholdings. Following this argument, will be included in the construct "ownership structure" variables that characterize the ownership concentration of the companies under study. The research model is presented in figure 1.

Figure 1. Path graphic of the proposed model



2.2 Construction of the disclosure Index

The disclosure index is based on the information firms provide in their annual reports to shareholders. The index is similar to that in Eng and Teo (1999), Eng *et al.* (2001), Eng and Mak (2003) and Peterson and Plenborg (2006). The design of the index is inspired by earlier studies and reports as, for example, Botosan (1997)[1], AICPA (1994), the PwC Value Reporting (1999) and CICA (2008). Common to these studies is that they focus on investors' needs. In the PwC value Reporting (1999) the most important value driver is the information regarding firm's strategic circumstances such as the future strategic direction and actions during the fiscal year, aimed at promoting strategic and financial objectives. They also find that information about market growth, market size, market share and competitiveness in the industry are among the ten most important value drivers. Botosan (1997), the Jenkins Report (AICPA, 1994) and CICA (2008) find that information about production is important for investors. In PwCs (1999) consider information about brands and customers as key drivers of value. Botosan (1997) included some areas within marketing strategy. In the marketing strategy literature like, for example, Doyle (2000) and Porter (1996), this area is considered important for the future success of a firm. We included in our index a category for addressing

[1] Botosan (1997) provide a discussion about the advantages and disadvantages of using AIRM disclosure index *versus* a self constructed disclosure index.

human capital, because this subject has gained considerable interest in accounting for intellectual capital and the debate about corporate governance. We also included in our index a category to score the information about their perspective of future evolution. In this sense, our disclosure index is based on the following six categories: strategy, market and competition, management and production, marketing, future perspective and human capital. A scoresheet was designed for scoring firms on the amount and the level of detail of disclosures. A total of 60 indicators within the six groups have been identified .

We read the annual reports of 2007 for the sample firms and assessed each annual report on the six disclosure categories. The disclosure index is unweighted as it assumes that each indicator of each disclosure category is equally important (Gray *et al.,* 1995). Cooke (1989) suggests that unweighted indices are an appropriate research instrument in disclosure studies when the focus of the research is directed at all users of corporate annual reports rather than the information needs of any specific user group. Despite that, we use a scale, of zero to two, to score the level of detail of the information disclosed about each indicator inside the six categories. The firms' score was zero if the company did not disclose anything about that indicator, the score was one if the company has disclosure without detail and, finally, the score was 2 if the company disclosure has detail. We proceed to the validation of our voluntary disclosure index, following Botosan (1997), based on the following points: comparison with similar studies using voluntary disclosure indexes; positive statistically significant correlations between the number of analysts and the voluntary disclosure scores; an accepted value for the Cronbach's alpha coefficient; and similar results with previous studies of the correlation between the voluntary disclosure level and firm characteristics.

2.3 Proxies for information asymmetry

Since the asymmetry of information of a company cannot be directly observed, literature offers a variety of ways to measure this variable. There are several studies, theoretical (Stoll, 1978; Glosten and Milgrom, 1985; Admati and Pfleiderer, 1988) and empirical (Amihud and Mendelson, 1986, 1989; Brennan and Subrahmanyam, 1996) that look into this issue. Welker (1995) applies a bid-ask spread scaled by closing price as a proxy for market liquidity. Leuz and Verrecchia (2000) suggest a bid-ask spread and trading volume in firm's shares as proxies for the information asymmetry component of firm's cost of capital. Peterson and Plenborg (2006) follow the studies of Welker (1995) and Leuz and Verrecchia (2000) by applying the bid-ask spread and turnover ratio as two complementary proxies for information asymmetry. The bid-ask spread is commonly thought to measure information asymmetry explicitly (Leuz and Verrecchia, 2000). The turnover ratio reflects the willingness of some investors to sell shares and others to buy. This willingness to trade shares should be inversely related to the level of information asymmetry (Leuz and Verrecchia, 2000). Following Petersen and Plenborg (2006), in our study the bid-ask spread and the turnover ratios are assumed to be proxies for information asymmetry. We followed Welker (1995) by considering the so called "baseline" spread (not conditioned on the occurrence of an information release). So, in our study the bid ask spread (BIDASK) is the daily bid ask spread (difference between the bid and the ask price) average of the company in the year of 2007. The turnover ratio (TURNOVER) is the value of shares traded during the year of 2007 divided by the firm's market value of equity at the end of the year.

2.4 Corporate governance characteristics

We divided the governance characteristics in two major categories: equity ownership structure and director's and supervisors' structures. To characterize the equity ownership structure we analyze the ownership concentration, management ownership and state ownership. To characterize the director's and supervisors' structures we used variables that are related with the board characteristics, the management incentives and the monitoring and control structures.

3. Data and Descriptive Statistics

3.1 Sample

Our sample consists of 140 listed firms from the Iberian Peninsula. Portugal has 38 firms included in this study, which represents 27,14% of our total sample and Spain has 102 firms included which represents 72,86%. The

sample of our work consists of non-financial Iberian companies listed in the market, in the year of 2007. Disregarding financial firms, insurance companies and those that have different accounting years than that of the calendar year (*e.g.* Football clubs) it's justified because they differ, by their special nature, on the accounting methods. In that sense, their inclusion would make the comparison with other companies harder. The consolidated accounts of the selected companies are analysed, when these companies are required to consolidate, and not the individual accounts, since for the study it makes more sense to analyse all the data of the group, due to the fact that all businesses contribute to the performance of the mother company. The accounting and market data used in the research were collected from the *Thomson Datastream* database, as well as from the analysis of reports and accounts of the companies and the information disclosed by companies in their official sites. We also collected data from the annual reports about the corporate governance of listed companies, made by the Portuguese Securities Market Commission (CMVM, 2008) and the Spanish Securities Market Commission (CNMV, 2008) for the year of 2007.

3.2 Descriptive statistics

In table 1 we show the descriptive statistics of the continuous variables, in table 2 of the dichotomous variables and in table 3 of the voluntary disclosure variables.

Table 1. Continuous variables

	N	Mean	Median	Std.Dev.	Min	Max
INDEP	140	0,262	0,273	0,187	0,000	0,750
NONEXEC	140	0,674	0,721	0,261	0,000	1,000
BNUMBER	140	10,057	9,000	4,001	3,000	22,000
BSIZE	140	0,476	0,462	0,162	0,152	0,944
EXPERTISE	140	4,107	3,000	4,619	0,000	25,000
PERFOR 1	135	0,056	0,060	0,058	-0,195	0,233
ASSETS	140	5 743	948	1,423	26	105 873
VARREM	138	0,157	0,090	0,190	0,000	0,730
OTHERREM	138	0,311	0,255	0,294	0,000	1,000
CAPSTATE	140	0,008	0,000	0,045	0,000	0,327
MAINFIVE	138	0,605	0,630	0,229	0,001	0,994
MAINSHARE	138	0,390	0,325	0,246	0,050	0,993
DIRCAP	130	0,230	0,110	0,264	0,000	0,993
SIGNIFICANT	137	0,624	0,650	0,213	0,000	0,990
TURNOVER	140	1,652	1,056	2,319	0,004	19,254
BIDASK	140	0,10	0,04	0,20	0,01	1,88
CONTROLINDEX	140	0,680	0,800	0,198	0,200	1,000
ROE	139	0,097	0,140	0,292	-1,854	1,233
PERFOR 2	139	0,106	0,094	0,105	-0,481	0,588
DIRCOMP	140	0,460	0,465	0,292	0,000	1,000

Variables definitions: INDEP is the number of independent members of the board divided by the total number of members; NONEXEC is the number of non-executive members of the board divided by the total number of members; BNUMBER is the number of members of the board; BSIZE is the number of members of the board divided by the natural logarithm of total assets; EXPERTISE is the average number of other societies in which board members exercise management functions; PERFOR1 is the earnings before interests and taxes divided by year-end total assets; ASSETS is the total assets (millions of Euros); VARREM is the value of the variable remuneration of the board divided by the total remuneration; OTHERREM is value of other types of remuneration to the board divided by the total remuneration; CAPSTATE is the proportion of the shares of the company own by the state; MAINFIVE is the proportion of the shares of the company own by the biggest five shareholders; MAINSHARE is the proportion of the shares of the company own by the biggest shareholder; TURNOVER is the value of shares traded during the year divided by the firm's market value of equity at the end of the year; BIDASK is the daily bid ask spread (difference between the bid price and the ask price) average of the company in the year of 2007; CONTROLINDEX is the firm's individual score on monitoring and control issues divided by the total score (5 indicators: Corporate governance commission, Big4, Internal audit, Audit committee and Remuneration committee); ROE is the net income divided by the shareholders' equity; DIRCAP is the proportion of capital owned by the board; PERFOR2 is the earnings before interests, taxes, depreciations and amortizations divided by year-end total assets; SIGNIFICANT include the significant participations of

shareholders that have, direct or indirectly, more than 2% of share capital and the shares held by other shareholders that exercise significant influence on company's life; DIRCOMP is the proportion of directors' remuneration that is not fixed.

By the analysis of the dichotomous variables we can conclude that the majority of companies in our study have an audit committee, a remuneration committee and have one of the big 4 external auditors. Otherwise, the majority of companies don't have an internal audit function and a corporate governance commission. We can also confirm that a big number of companies have management ownership, 95%, and that only 6% of the companies have state ownership.

Table 2. Dichotomous variables

	N	0	%	1	%
BIG4	140	18	12,90	122	87,10
AUDCOM	140	24	17,10	116	82,90
REMCOM	140	11	7,90	129	92,10
INTAUD	140	49	35,00	91	65,00
DIROWNER	140	7	5,00	133	95,00
STATEOWNER	140	131	93,60	9	6,40
CORPGOVCOM	140	122	87,10	18	12,90

Variables definitions: BIG4 is a binary variable which took the value of 1 for Big 4 audit firms and 0 for non-big 4 audit firms; AUDCOM is a binary variable which took the value of 1 if a audit committee exists and 0 if otherwise; REMCOM is a binary variable which took the value of 1 if a remuneration committee exists and 0 if otherwise; INTAUD is a binary variable which took the value of 1 if a internal audit function exists and 0 If otherwise; DIROWNER is a binary variable which took the value of 1 if directors own shares of the company and 0 if otherwise; STATEOWNER is a binary variable which took the value of 1 if a the state own shares of the company and 0 if otherwise; CORPGOVCOM is a binary variable which took the value of 1 if a corporate governance commission exists and 0 if otherwise.

By the analysis of the disclosure variables, which result from the application of the disclosure index, we can see that the score for strategy and management is significantly higher than for marketing and human capital. The score for strategy is the highest score, suggesting that management find information about strategy an important issue.

Table 3. Disclosure variables

	N	Mean	Median	Std.Dev.	Min	Max
INDTOTAL	140	0,470	0,475	0,152	0,109	0,850
INDMARK	140	0,315	0,250	0,235	0,000	0,929
INDSTRA	140	0,672	0,733	0,190	0,133	1,000
INDCOMP	140	0,369	0,364	0,164	0,045	0,727
INDMANAG	140	0,577	0,583	0,197	0,182	1,000
INDFUT	140	0,383	0,375	0,180	0,000	0,813
INDHCAP	140	0,353	0,313	0,254	0,000	1,000

Variables definitions: INDTOTAL is the firm's individual disclosure total score on the 60 indicators; INDMARK is the proportion of the firm's individual disclosure score on marketing issues to the maximum possible score applied in those issues (7 indicators); INDSTRA is the proportion of the firm's individual disclosure score on strategic issues to the maximum possible score applied in those issues (15 indicators); INDCOMP is the proportion of the firm's individual disclosure score on market and competition issues to the maximum possible score applied in those issues (11 indicators); INDMANAG is the proportion of the firm's individual disclosure score on management and production issues to the maximum possible score applied in those issues (11 indicators); INDFUT is the proportion of the firm's individual disclosure score on future perspective issues to the maximum possible score applied in those issues (8 indicators); INDHCAP is the proportion of the firm's individual disclosure score on human capital issues to the maximum possible score applied in those issues (8 indicators).

Marketing is the category with the lowest score. Even though the firms of today are increasingly dependent upon intangible resources disclosure on human capital is still one of the lowest score. The total voluntary disclosure index presents a mean of 47% of voluntary disclosure on the six categories included in our index.

4. Analysis and Results

4.1 Structural Equation Model

We used a structural equation model to analyse the direct and indirect relation between corporate governance characteristics, voluntary disclosure, organizational performance and the proxies of the information asymmetry in the market. In table 4 we have the explanation of the indicators of each construct included in our model, the Cronbach's alpha[2] and the percentage of variance explained obtained from the exploratory factor analysis. In this model, η represents the endogenous latent variables (constructs) and ξ represents the exogenous latent variable (construct).

We divided the governance characteristics in two constructs that are correlated, one for the directors' and supervisors' structures and another for ownership structure. In the last one we included mainly variables related with ownership concentration. The model was estimated (maximum likelihood estimation) by using EQS 6.1 trough the SPSS 17.0 and using standardized variables. The choice of standardized variables overcomes the problems in fixing the scale of the latent variables resulting from the difference in scale of the original variables, as suggested by Long (1983), O'Brien and Reilly (1995), among others. The results from table 5 show us the standardized coefficients for each of the structural design relations established before, as well as the statistical significance of each one of them. The correlation between directors' and supervisors' structures and ownership structure (St. Beta = -0,419; $p<0,01$) and between the turnover and the bid ask spread (St. Beta= -0,182 ; $p<0,05$) presented a negative sign and statistical significance.

In this first model the non-significant relations allow us to reject some of the developed hypothesis. We found three statistically non-significant relations. The relation between ownership structure and voluntary disclosure, although presented the expected negative sign, which suggest that bigger ownership concentration led to a lower level of voluntary disclosure, was statistically non-significant. So we have to reject the hypothesis H_{2a}.

The relation between ownership structure and the organizational performance presented a positive coefficient but statistically non-significant. So we have to reject the hypothesis H_{2d}.

Finally, the relation between voluntary disclosure and turnover presented a positive sign but statistically non-significant. So we have to reject the hypothesis H_{4b}. We made the respecification of the model by retiring the non-significant relations.

---

[2] One of the most commonly used indicators of internal consistency is Cronbach's alpha coefficient. It's also common to accept that the Cronbach's alpha value should be above 0,7.

Table 4. Indicators for each construct included in the structural equation model

Constructs	Indicators	Cronbach's alpha[3]	Variance Explained
Directors' and supervisors' structures ξ_1	(x_1) Proportion of independent directors on the board (X_2) Size of the board (X_3) Directors' compensations (X_4) Proportion of non-executive directors on the board (X_5) Board expertise (X_6) Monitoring and Control index	0,703	0,414
Ownership structure ξ_2	(X_7) Significant participations (X_8) Main shareholder (X_9) Main five shareholders	0,903	0,830
Voluntary disclosure η_1	(Y_1) Voluntary disclosure index in strategy (Y_2) Voluntary disclosure index in market and competition (Y_3) Voluntary disclosure index in management and production (Y_4) Voluntary disclosure index in future perspective (Y_5) Voluntary disclosure index in marketing (Y_6) Voluntary disclosure index in human capital	0,841	0,560
Org. performance η_2	(Y_7) Return on equity (Y_8) Performance 1 (Y_9) Performance 2	0,868	0,793
Turnover η_3	(Y_{10})Turnover ratio	___	1
Bid-Ask η_4	(Y_{11}) Bid-ask spread	___	1

The evaluation of the final model is usually made through two sequential stages: (1) evaluation of the measurement model and (2) evaluation of the structural model.

Table 5. Standardized estimation of the initial structural model coefficients

	Structural Equations			
	η_1 Voluntary disclosure	η_2 Org performance	η_3 Turnover	η_4 Bid ask
ξ_1 Directors' and supervisors' structures	0,449*** (3,243)	0,401*** (3,242)		
ξ_2 Ownership structure	-0,014 (-0,151)	0,117 (1,104)	-0,447*** (-5,239)	0,217** (2,390)
η_1 Voluntary disclosure			0,140 (1,408)	-0,270*** (-2,703)
η_2 Org performance	0,309*** (3,008)		-0,318*** (-3,403)	

*Significant at 0.05< p ≤ 0.10 ; **Significant at 0.01< p ≤ 0.05; ***Significant at p ≤ 0.01
Test statistic below

[3] The Cronbach's alpha is a commonly used measure of reliability for a set of two or more construct indicators. Values range between 0 and 1, with higher values indicating higher reliability among the indicators. It's also common to accept that the Cronbach's alpha value should be above 0,7.

The standardized estimation of the measurement model coefficients and the constructs' reliability were analysed. The results show us the statistical significance of each indicator within each one of its construct. All indicators show a statistical significance at 0,01 level. The principal measure in assessing the measurement model is the construct reliability. Reliability is a measure of the internal consistency of the construct indicators, depicting the degree to which they "indicate" the common latent (unobserved) construct. A commonly used threshold value for acceptable reliability is 0,70. In our study, all constructs with more than one indicator presented a value greater than 0,70 in relation to their reliability. These results, that are shown in table 6, provided us with a bigger confidence that the individual indicators are all consistent in their measurements. In table 7 we show the standardized estimation of the final model coefficients and their statistical significance.

Table 6. Construct reliability

	η_1 Voluntary disclosure	η_2 Org performance	η_3 Turnover	η_4 Bid ask	ξ_1 Directors' and supervisors' structures	ξ_2 Ownership structure	
Construct reliability	0,83	0,88	1	1	0,73	0,86	

The results support the hypotheses H_{1a}, H_{1b}, H_{2b}, H_{2c}, H_{3a}, H_{3b} and H_{4a}. Directors' and supervisors' structures present a positive and statistically significant relation ($p<0,01$) with voluntary disclosure and with organizational performance. These results suggest that the appointment of independent and non-executive directors, the dimension of the board, the board expertise, the board compensation and the formation of supervising structures are positively related to the provision of voluntary information and follow the literature that relates corporate governance characteristics to organizational performance. Kanagaretnam *et al.*, (2007) found that the effectiveness of the board has a significant impact on both the quantity and quality of corporate disclosures. Klein (1998) also found significant ties between firm performance and how boards are structured. The turnover ratio is, as stated in the previous literature review, the willingness of some investors to sell shares and others to buy. The results show that the turnover ratio is negatively related with ownership structure construct and with organizational performance. The negative relation with ownership structure suggests that a bigger ownership concentration leads to less stock transactions in the market. Following the arguments of Bolton and Von Thadden (1998), in a concentrated ownership structure the number of shareholders who can trade the stock is also smaller, which in turn reduces the liquidity of the stock. The negative relation with organizational performance suggests that shares of companies with high performances are held by shareholders for a longer period than shares of companies that present worse performances. We follow the arguments of Amihud and Mendelson (1986). Stocks of firms with higher returns are allocated in equilibrium to portfolios with longer expected holding periods. In this sense, the observed asset return must be an increasing function of the expected holding periods, it also implies that the observed asset return must be a decreasing function of the turnover rate of that asset.

In relation to bid-ask spread, we found a positive statistically significant relation ($p<0,05$) with ownership structure. This result suggests that bigger ownership concentration leads to the formation of inefficient prices in the market. In a concentrated ownership, which is the case of Portugal and Spain, the main shareholders may have access to private, value-relevant information about the firm. In this situation, investors mitigate losses to informed traders by charging wider spreads (Heflin and Shaw, 2000). On the contrary, the relation between the bid-ask spread and voluntary disclosure is negative and statistically significant ($p<0,05$), following the result obtained by Petersen and Plenborg (2006). This result confirms that voluntary disclosure leads to more efficient prices and tends to reduce information asymmetries among informed and uninformed investors (Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994). We analyzed the goodness of fit tests of the final model. In our model we analysed the values for CFI= 0,953, RMSEA= 0,050, NNFI= 0,944 and IFI= 0,954. The values observed for these indexes indicate that the model fits to the data.

Table 7. Standardized estimation of the final structural model coefficients

	Structural Equations			
	η1 Voluntary disclosure	η2 Org performance	η3 Turnover	η4 Bid ask
ξ_1 Director's and supervisors' structures	0,456*** (3,622)	0,337*** (3,119)		
ξ_2 Ownership structure			-0,481*** (-5,621)	0,222** (2,429)
η1 Voluntary disclosure				-0,249** (-2,529)
η2 Org performance	0,312*** (3,091)		-0,255*** (-3,092)	
R^2	0,40	0,12	0,26	0,14

*Significant at 0.05< p ≤ 0.10 ; **Significant at 0.01< p ≤ 0.05; ***Significant at p ≤ 0.01
Test statistic below

5. Summary and Concluding Remarks

We applied the technique of structural equation modelling and divided the governance rules in two constructs, one for the directors' and supervisors' structures and another for the ownership structure. In the last one we included mainly variables related with ownership concentration. The results showed that the appointment of independent and non executive directors, the dimension of the board, the management incentives and expertise, and the formation of supervising structures are positively related to the provision of voluntary information and follow the literature that relate corporate governance characteristics to organizational performance (Baysinger and Butler, 1985; Dehaene *et al.*,2001; Kanagaretnam *et al.*, 2007). The turnover ratio was negatively related with the ownership structure construct which suggests that a bigger ownership concentration lead to less stock transactions. The negative relation with organizational performance suggests that stocks of firms with higher returns are allocated in portfolios with longer expected holding periods (Amihud and Mendelson, 1986). The positive relation between bid-ask spread and the ownership structure construct suggests that bigger ownership concentration lead to the formation of inefficient prices in the market. On the other hand, the negative relation between the bid-ask spread and voluntary disclosure confirms that voluntary disclosure leads to more efficient prices and tends to reduce information asymmetry in the market (Petersen and Plenborg, 2006). The results follow the argument that for firms with high levels of disclosure the bid-ask spread is lower. In this case, investors can be relatively confident that their stock transaction occurs near to a "*fair price*". However, in firms with a high ownership concentration investors tend to increase the bid-ask spreads and trade less, which, in this case, reduces the liquidity of the stock. These results are consistent with those obtained in previous research (Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994; Bolton and Von Thadden, 1998; Heflin and Shaw, 2000). In addition, the results from the structural equation model allowed us to understand how the governance rules exert influence on the proxies of information asymmetry in the market. We concluded that the ownership structure exerts a direct influence and that directors' and supervisors' structures exert an indirect influence, through the organizational performance and the voluntary disclosure of information. The failure to find the relationship between voluntary disclosure of information and the turnover ratio shows us that the liquidity of shares is more related to the greater or lesser concentration of shareholders, with the performance of their companies than with the access to information. Moreover, it is clear that the role that information disclosure plays in these markets is mainly at the level of price formation. We also made the estimation of six structural equations using individually each one of the categories considered in the construct of the voluntary disclosure index. This allows us to pursue two main analyses. Firstly, when we analyse the models using each category of voluntary disclosure separately we see that some relationships are no longer statistically significant, when compared to the results obtained with the estimation of the global model. This can suggest that, in general, one type of information

can be insufficient in itself. Only when the information is combined can provide useful information for investors. Secondly, we found that the disclosure of information about the company's strategy or future perspective is more useful than other types of information as a tool that companies posses to influence the market. Our results showed that these categories of voluntary disclosure exert a significant influence on information asymmetry. Still, others cease to have any relevant action when their effects are analysed individually.

Our study has some limitations that suggest a need for future work. Our voluntary disclosure index was based on the information provided by the firms in their annual reports or in public websites. As a result any disclosures those firms provided in analysts meetings, conference calls and in other circumstances are not included in the final result of our index. With our work we seek to understand the specific aspects related with the voluntary disclosure of information by firms and its impact on information asymmetry, but the corporate information environment is wider. In this sense, and for future work, it would be interesting to explore the interactions among the several information sources, namely the relations between firm's voluntary disclosure, mandatory disclosure and the information produced by analysts. Furthermore, future research should investigate other variables which might influence the relation between corporate governance, disclosure policy and information asymmetry, using alternative proxies for information asymmetry.

References

Admati, A. and Pfleiderer, P., 1988. A theory of intraday pattern: volume and price variability. Review of Financial Studies, 1(1), 3-40.

AICPA, 1994. A Customer Focus Meeting the Information Needs of Investors and Creditors. Special Committee on Financial Reporting. American Institute of Certified Public Accountants.

Allegrini, M. and Greco, G., 2011. Corporate boards, audit committees and voluntary disclosure: evidence from Italian Listed Companies. Journal of Management and Governance. Online First™, http://www.springerlink.com/content/32720028107w4746, 24 February.

Amihud, Y. and Mendelson, H., 1986. Asset pricing and the bid-ask spread. Journal of Financial Economics 17, 223-49.

Amihud, Y. and Mendelson, H., 1989. The effects of beta, bid-ask spread, residual risk and size on stock returns. Journal of Finance 44 (2), 479-86.

Akerlof , G., 1970. The market for "lemons": quality uncertainty and the market mechanism. The Quarterly Journal of Economics 84 (3), 488-500.

Arcay, M. and Vázquez, M., 2005. Corporate characteristics, governance rules and the extent of voluntary disclosure in Spain. Advances in Accounting 21, 299-331.

Baysinger B. and Butler, H., 1985. Corporate governance and the board of directors: performance effects of changes in board composition. Journal of Law, Economics and Organization 1, 650–657.

Barry, B. and Brown, S., 1985. Differential information and security market equilibrium. The Journal of Financial and Quantitative Analysis 20 (4), 407-422.

Berle, A. and Means, G., 1933. The modern corporation and private property. New York: Macmillan.

Bhattacharya, U. and Spiegel, M., 1991. Insiders, outsiders and markets breakdowns. The Review of Financial Studies 4 (2), 255-282.

Bolton, P. and Von Thadden, E., 1998. Blocks, liquidity and corporate control. The Journal of Finance 53 (1), 1-25.

Botosan, C., 1997. Disclosure level and the cost of equity capital. The Accounting Review 72 (3), 323-349.

Brennan, M. and Subrahmanyam, A., 1996. Market microstructure and asset pricing: on the compensation for illiquidity in stock returns. Journal of Finance Economics 441-64.

Bushee, B. and Noe, C., 2000 Corporate Disclosure Practices, Institutional Investors and Stock Return Volatility. Journal of Accounting Research 38, 71-202.

Cai, C., Keasey, K. and Short, H., 2006. Corporate governance and information efficiency in security markets. European Financial Management 12 (5), 763-787.

Chau, G. and Gray, S., 2002. Ownership structure and corporate voluntary disclosure in Hong Kong and Singapore. The International Journal of Accounting 37(2), 247-265.

Chung-Cheng Hsu, L., 2007. The influence of dimensions of corporate governance on firm values using applied structural equation model. Journal of American Academy of Business, Cambridge 11(1), 204-213.

CICA, 2008. Corporate Reporting to Stakeholders. CICA Research Studies, Toronto: Canadian Institute of Chartered Accountants.

CMVM, 2008. Relatório Anual sobre o Governo das Sociedades Cotadas em Portugal. Comissão do Mercado de Valores Mobiliários. http://www.cmvm.pt.

CNMV, 2008. Corporate Governance Report of Entities with Securities Admitted to Trading on Regulated Markets 2007. Comisión Nacional del Mercado de Valores. http://www.cnmv.es.

Cooke, T., 1989. Voluntary corporate disclosure by Swedish companies. Journal of International Financial Management and Accounting 1(2), 171-195.

Dehaene, A., De Vuyst, V. and Ooghe, H., 2001. Corporate performance and board structure in Belgian companies. Long Range Planning 34 (3), 383-398.

Depoers, F., 2000. A cost benefit study of voluntary disclosure: some empirical evidence from French listed companies. European Accounting Review 9 (2), 245-263.
Denis, K. and McConnell, J., 2003. International Corporate Governance. Journal of Financial and Quantitative Analysis 3, 1-36.
Diamond, D. and Verrecchia, R., 1991. Disclosure, liquidity and the cost of capital. Journal of Finance 38 (5), 1457-1469.
Diamond, D., 1985. Optimal release of information by firms. Journal of Finance 40 (4), 1071-1094.
Diamond, D. and Verrecchia, R., 1991. Disclosure, liquidity and the cost of capital. Journal of Finance 38 (5), 1457-1469.
Doyle, P., 2000. Value based marketing. Journal of Strategic Marketing, 8 (4), 299-311.
Eng, L. and Mark, Y., 2003. Corporate governance and voluntary disclosure. Journal of accounting and Public Policy 22 (4), 325-345.
Eng, L. and Teo, H., 1999. The relation between annual report disclosures, analysts' earnings forecasts and analyst following: evidence from Singapore. Pacific Accounting Review 11(2), 219-239.
Eng, L., Hong, K. and Ho, Y., 2001. The relation between financial statement disclosures and the cost of equity capital of Singapore firms. Accounting Research Journal 14 (1), 35-48.
Fama, E. and Jensen, M., 1983. Separation of ownership and control. Journal of Law and Economics 26 (2), 301-325.
García Benau, M. and Monterrey Mayoral, J. 1993. La revelacion voluntaria en las compañias Españolas cotizadas en bolsa. Revista Española de Financiación y Contabilidad 74, 53-70.
Golsten, L. and Milgrow, P., 1985. Bid, Ask and Transaction Prices in a Specialist Market with heterogeneously informed traders. Journal of Financial Economics 13, 71-100.
Gray, R., Kouhy, R. and Lavers, S., 1985. Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure. Accounting, Auditing and Accountability Journal 8 (2), 47-77.
Healy, P., Hutton, A. and Palepu, K., 1999. Stock performance and intermediation changes surrounding sustained increases in disclosure. Contemporary Accounting Research 16 (3), 485-520.
Healy, P. and Palepu, K., 2001. Information asymmetry, corporate disclosure and capital markets: A review of the empirical disclosure literature. Journal of Accounting and Economics 31, 405-440.
Helflin, F. and Shaw, K., 2000. Blockholder ownership and market liquidity. Journal of Financial and Quantitative Analysis 35 (4), 621-633.
Ho, S. and Wong, K., 2001. A study of the relationship between corporate governance structure and the extent of voluntary disclosure. Journal of International Accounting, Auditing and Taxation 10, 139-156.
Jensen, M. and Meckling, W., 1976. Theory of the firm: managerial behaviour, agency costs and ownership structure. Journal of Financial Economics 3 (4), 305-360.
Lang, M. and Lundholm, R., 1993. Cross-sectional determinants of analyst ratings of corporate disclosures. Journal of Accounting Research 31 (2), 246-271.
Laksmana, I., 2008. Corporate board governance and voluntary disclosure of executive compensation practices. Contemporary accounting research 25 (4), 1147-1182.
Lee, C., Rosenstein, S. and Rangan, N., 1992. Board composition and shareholder wealth: the case of management buyouts. Financial Management 21, 58–72.
Leuz, C. and Verrecchia, R., 2000. The economic consequences of increased disclosure. Journal of Accounting Research 38, 91-124.
Lev, B. and Penman, S., 1990. Voluntary Forecast Disclosure, Nondisclosure, and Stock Prices. Journal of Accounting Research 28 (1), 49-76.
Linsley, P. and Shrives P., 2006. Risk reporting: a study of risk disclosures in annual reports of UK companies. British Accounting Review 38 (4), 387-404.
Long, S., 1983. Confirmatory factor analysis: a preface to Lisrel. Newbury Park, CA: Sage Publications.
McConnell, J. and Servaes, H., 1990. Additional evidence on equity ownership and corporate value. Journal of Financial Economics 27(2), 595-612.
McKinnon, J. and Dalimunthe, L., 1993. Voluntary disclosure of segment information by Australian diversified companies. Accounting and Finance 33 (1), 33–50.
Meek, G., Roberts, C. and Gray, S., 1995. Factors influencing voluntary annual report disclosures by US and UK and continental European multinational corporations. Journal of international Business Studies 26 (3), 555-572.
Megginson, W., Nash, R. and Randenborgh, M., 1994. The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis. Journal of Finance 49 (2), 403-452.
Méndez, C. and García, R., 2007. The effects of ownership structure and board composition on the audit committee meeting frequency: Spanish evidence. Corporate Governance: an international review 15(5), 909–922.
Merton, R., 1987. A Simple Model of Capital Market Equilibrium with Incomplete Information, Journal of Finance 42 (3), 483-510.
Mitchell, J., Chia, C. and Loh, A., 1995. Voluntary disclosure of segment information: Further Australian evidence. Accounting and Finance 35 (2), 1–16.
Myers, S. and Majluf, M., 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13 (2), 187-221.
O'Brien, R. and Reilly, T., 1995. Equality in constrains and metric-setting measurement models. Structural Equation Modeling 2 (1), 1-12.
O'Sullivan, M., Percy. M. and Stewart, J., 2008. Australian evidence on corporate governance attributes and their association with forward-looking information in the annual report. Journal of Management and Governance 12, 5-35.
Patell, J., 1976. Corporate Forecasts of Earnings Per Share and Stock Price Behavior: Empirical Tests. Journal of Accounting Research 14 (Autumn), 246-76.
Penman, S., 1980. An Empirical Investigation of the Voluntary Disclosure of Corporate Earnings Forecast. Journal of Accounting Research 18 (1), 132-160.

Petersen C. and Plenborg, T., 2006. Voluntary disclosure and information asymmetry in Denmark. Journal of international Accounting, Auditing and Taxation 15, 127-149.

PwC, 1999. Value Reporting – Forecasts 2000. PricewaterhouseCoopers.

Porter, M., 1996. What is strategy? Harvard Business Review, 74 (6), 61-78.

Kanagaretnam, K., Lobo, G. and Whalen, D., 2007. Does good corporate governance reduce information asymmetry around quarterly earnings announcements? Journal of Accounting and Public Policy 26(4), 497-522.

Kim, O. and Verrecchia, R., 1994. Market liquidity and volume around earnings announcements. Journal of Accounting and Economics 17 (1), 41-68.

Klein, A., 1998. Firm performance and board committee structure. Journal of Law and Economics 41, 275-303.

Raffournier, B., 1995. The determinants of voluntary financial disclosure by Swiss listed companies. The European Accounting Review 4 (2), 261-280.

Ranaldo, A., 2002. Transaction costs on the Swiss stock. Financial Markets and Portfolio Managemnet 16, 53-63.

Schadewitz, H. and Blevins, D., 1998. Major determinants of interim disclosures in an emerging market. American Business Review 16 (1), 41–55.

Shleifer, A. and Vishny, R., 1986. Large Shareholders and Corporate Control. Journal of Political Economy 94 (3), 461-488.

Shleifer, A. and Vishny, R., 1997. A Survey of Corporate Governance. Journal of Finance 52, 737-783.

Singhvi, S. and Desai, H., 1971. An empirical analysis of the quality of corporate financial disclosure. The Accounting Review 46 (1), 621-632.

Stoll, H., 1978. The Pricing of Security Dealer Services: An Empirical Study of NASDAQ Stocks. Journal of Finance 33, 1153-72.

Wang, K., Sewon O. and Claiborne, M., 2008. Determinants and consequences of voluntary disclosure in an emerging market: Evidence from China. Journal of International Accounting, Auditing and Taxation 17 (1), 14-30.

Welker, M., 1995. Disclosure policy, information asymmetry and liquidity in equity markets. Contemporary Accounting Research 11(2), 801-827.

Zingales, L. The value of the voting right: a study of the Milan stock exchange experience. The Review of Financial Studies 7(1), 125-148, 1994.